

AERO 101

Hello and welcome to the seventeenth segment of Aero101. Last week was Global Time Attack/Super Lap Battle, and a couple of our friends were competing in it! So this week we will cover their cars, starting with the Singular Motorsports #13 and #337 and then the Blackbird Fabworx #222!

First, the Singular Motorsports #13 piloted by Ryan Passey.



Ryan's car has it all! At the front of the car is a moderate splitter, made of plywood and reinforced with carbon fiber. The splitter features 2 diffuser sections that feed air into the wheel well and out the 2 piece vented fenders. This helps reduce the pressure underneath the front of the car, creating more downforce. Above the splitter is an appropriately sized radiator inlet, which is

shrouded to ensure proper flow. The radiator inlet also feeds the intercooler, which has a dedicated exit in the hood. The intercooler hood vent has a proper exit shroud that helps create high pressure immediately in front of the vent, causing low pressure to exist behind it and drawing air out. Along the sides of the hood are hood louvers that give the airflow through the radiator a place to escape. This decreases underhood pressure and thereby creates more downforce. On the sides of the splitter are endplates to prevent the high pressure above the splitter from spilling over to the low pressure side. Above the endplates are canards constructed of carbon fiber and aluminum, placed at a moderate angle so they don't mess with the airflow on the rear part of the car. The vortex created by the canards should help keep air exiting the fenders attached.



Now we approach the center section of the car. All along the underbody is a flat bottom, smoothing out any imperfections to

reduce the pressure build up. Along the sides of the car are side sills/splitters, constructed of aluminite, and featuring an airflow conditioner right behind the front tire. As the tires are turning, the turbulent air ejected off of them will be straightened by this device. It also helps guide air coming out from the fenders. The side sills prevent the air from entering the low pressure of the undertray. Finally, at the rear of the car, we have a large COT rear wing, trunk spoiler, and rear diffuser. The COT wing is mounted using solid aluminum wing mounts, profiled to resemble an airfoil to cut down on drag. The wing is placed directly over the diffuser, and at roof level to reach clean air. The COT wing's profile allows for low drag and moderate downforce. Ryan's COT wing has a gurney flap to further extrapolate downforce. On each side of the wing are large endplates, to keep air from spilling over. The large endplates help create more downforce by sealing the low pressure side of the wing from the ambient airflow. The trunk spoiler helps create some downforce from the air following the streamlines of the car. It reduces some of the downforce from the rear wing, but since it generates its own the positives outweigh the negatives. The moderate angle works well with shape of the COT wing. The rear diffuser has a long center section, which is why it is higher than the outside sections. Because of the rear wing's placement, the diffuser works more efficiently. The exhaust also contributes to the diffusers efficiency, due to the fact that the hot exhaust jet energizes the low pressure flow exiting the diffuser. Like the front fenders, the rear bumper is vented, with a boxed section featuring slats to help straighten the air coming off of the tire, though we believe the slats to be facing the wrong way.

This is all for today, stay tuned for tomorrow, when we cover Singular Motorsports #337!